

REMARKS**Summary of the Office Action**

Claims 1-36 are pending in the application.

Claims 1, 3-13, 15-25 and 27-36 have been rejected under 35 U.S.C. § 103(a) as being obvious from Keshav U.S. Patent No. 5,627,970 ("Keshav") in view of Derby et al. U.S. Patent No. 5,359,593 ("Derby") and U.S. Patent No. 5,359,593 ("Yin"). Claims 2, 4, and 26 have been similarly rejected under 35 U.S.C. § 103(a) as being obvious from Keshav, Derby and Yin in further view of Gittins et al. U.S. Patent No. 5,526,350 ("Gittins").

Claims 1, 13 and 25 have been rejected under 35 U.S.C. § 112 as being indefinite.

The Examiner also has objected to certain informalities in these three claims.

Statement of Substance of Interview

Applicants thank the Examiner for the courtesies extended to the undersigned during the telephone interview on November 7, 2005.

The undersigned and the Examiner discussed claims 1, 13 and 25 with respect to the Office Action. No agreement was reached with respect to the prior art rejections of these claims.

Applicants' Reply

Applicants respectfully traverse the § 112 rejection and the prior art rejections of the claims.

Claim Amendments

Applicants have amended claim 1, 13 and 25 for clarity and to correct the informalities that were kindly noted by the Examiner. The amended claims now call for

“withholding some of the data input for transmission” and “dropping selected data” in a manner “consistent with the processing requirement at the receiver” (e.g., image quality at the receiver).

No new matter is added and the claim terms have proper support in the specification. For example, support for the notion of “withholding some of the data input for transmission” may be found in the specification at: page 7, lines 5-9 “this will stop the media from sending further data”; page 7, line 24 “dropping frames”; and page 8, lines 7-10 “removing [coefficients] from the stream”; etc.

Further, the notions of “dropping selected data” “consistent with the processing requirement at the receiver” (which are related to the notion of “an acceptable sequence of data”) are supported, for example, in the specification at: page 2 lines 3-7 “estimate is increased/decreased by sender depending on . . . acknowledgement from receiver”; page 4 lines 3-11 “selective retransmission can be provided for”, and “[the] receiver determines if there is enough time to receive a retransmitted packet before it is needed”; page 4 lines 23-27 “the time stamp . . . provides an indication of the presentation time of the packet”; page 7 lines 30-35 “ a frame should not be dropped if other frames depend on it”; page 8 lines 6-10 “identifying . . . those coefficients . . . which are least important in terms of image quality and removing them from the stream; page 11 lines 11-23 “some degree of loss can be tolerated” and “Flashpix has the capability to be displayed at different resolutions, and hence different bandwidth requirements when sending a picture across the Internet”; etc.

§ 112 rejection

Claims 1, 13 and 25 were amended in the previous Reply (January 10, 2005) to require “adjusting the data flow for transmission in real time based on the current estimate in order to maintain an acceptable sequence of data.”

Applicants respectfully submit that the objected-to phrase “an acceptable sequence of data” is readily understood with reference to usefulness or processing of the data at the receiver. An acceptable sequence of data may, for example, have select frames or data dropped in a manner that avoids stopping and restarting video presentation, processing or playback at the receiver. (See e.g., specification page 1 lines 21-26). The acceptable sequence of data may involve selective retransmission of dropped frames if instructed by the receiver. (See e.g., page 4 lines 3-19). Further, for example, the acceptable sequence of data may have only certain select types of frames “dropped.” (See e.g., page 7 lines 30-35, page 8 lines 7-10, page 9, lines 5-14, page 11 lines 11-23, etc.).

For increased clarity, applicants have now further amended claims 1, 13 and 25 so that the phrase “acceptable sequence of data” now explicitly refers a processing requirement at the receiver.

Applicants respectfully submit that claims 1, 13 and 25 are definite and conform to all requirements of § 112

Prior art rejectionsIndependent claims 1, 13, and 25

Applicants' inventive methods and systems concern data transmission from a sender to a receiver over a digital communications network. The methods and systems involve maintaining current estimates of the available transmission bandwidth on the network; and

accordingly in a real time response to the current estimates, withholding some of the data input for transmission so that the data is transmitted without congestion and received in a data sequence, which is acceptable for further processing at the receiver. Withholding some of the data input may include dropping selected data frames or dropping selected block coefficients, which do not affect the usefulness of the received data sequence at the receiver.

In particular, claims 1, 13 and 25 require withholding some of the data input for transmission based on both (1) a current estimate of available bandwidth, and (2) a processing requirement at the receiver (e.g., image quality). Some data is withheld (i.e. not transmitted) so that data sequences are transmitted over uncongested networks. Only data sequences that are consistent with the processing requirement are transmitted/delivered to the receiver.

Applicants' respectfully submit that at least these elements of the claims are not shown, taught or suggested by the cited references — Keshav, Derby, and Jin, whether taken individually or in combination. For example, none of the cited references shows, teaches, or suggests dropping select data frames or select block coefficients in response to network congestion in a manner that ensures the usefulness of received data set.

As previously noted (see e.g., Reply to Office Action, May 21, 2004, pages 8-9), Keshav is only concerned with a flow control mechanism for selecting a suitable transmission rate so that data delivery is over an “uncongested” network. Similarly, Derby selects or requests a network connection of appropriate bandwidth for data delivery over an “uncongested” network. Neither Keshav nor Derby withholding some of the input data (e.g., dropping frames or coefficients) for “uncongested” transmission in a manner which ensures that an acceptable (i.e., useful) sequence of data is delivered.

Applicants further note that the latest cited reference — Yin, describes communication of congestion control information between networks operating under dissimilar protocols such as ATM and TCP/IP. Yin uses a network interconnection device for this communication purpose. (See e.g., Abstract). Yin, as the Examiner has correctly noted, describes dropping TCP packets when congestion on the TCP network is detected and reported. (See e.g., Abstract, col. 2 line 65 - col. 4 line 8.) However, Yin drops a TCP packet only to communicate or indicate to a first network that the second network has detected congestion. (See e.g., col. 13 lines 61-67, and col. 14 lines 15-26). Yin's dropped packet can be any packet (i.e., the next packet in queue) without regard to a processing requirement at the data receiver. Yin's congestion control mechanisms (such as ATM ABR and sliding window control) are themselves conventional. In particular, like Keshav and Derby, Yin does not show, teach or suggest withholding some of the input data for "uncongested" transmission in a manner which ensures that the delivered data sequences are consistent with processing requirements at the receiver.

Accordingly, independent claims 1, 13, and 25 are patentable over the cited references.

Dependent claims 2-12, 14-24 and 26-36

Dependent claims 2-12, 14-24 and 26-36 are patentable over the cited prior art for at least the same reasons as their respective parent claims 1, 13 and 25 are patentable as discussed above.

Conclusion

For the reasons set forth above, applicants respectfully submit that this application is now in condition for allowance. Reconsideration and prompt allowance of which are respectfully requested.

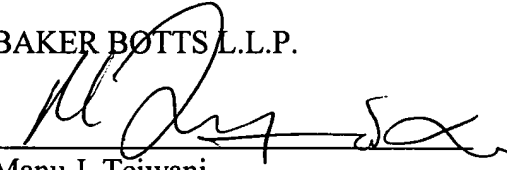
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Applicants request that the Examiner should kindly contact the undersigned attorney by telephone for discussion in case there are any remaining issues that need to be resolved.

Respectfully submitted,

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